Space Weather Forecast

Issued on Wednesday, 26 October 2022 at 13:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1/Minor geomagnetic storms days 2-4 (27th-29th). Slight Chance of Minor (R1) Radio Blackouts throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been Low, with two common class flares from from a relatively simple spot in the northeast quadrant on 25th. There are four other sunspot regions on the visible disc. Three of which are in the southwest quadrant, two of these are of modest size and complexity and one is small and simple. The remaining spot currently resides in the northeast which also displays modest size and complexity. No Earth-directed coronal mass ejections have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind parameters were indicative of a gradual exit from the High Speed Stream of a negative coronal hole. Solar wind speeds declined from slightly elevated slow-ambient. Total magnetic field strength was weak, with the north-south component mostly weakly positive. Geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mainly Low with a slight chance of Moderate class flares.

Solar Wind / Geomagnetic Activity: No Earth-directed coronal mass ejections have been observed. The Earth is expected to experience continued slow ambient solar wind speeds during day 1 and the first half of day 2 (26th and 27th). Either during the second half of day 2 (27th) or during day 3 (28th) the Earth is anticipated to connect with the high speed stream related of a coronal hole in the western hemisphere. A further enhancement is possible to elevated solar winds speeds on day 4 (29th) due to the arrival of another coronal hole currently near centre disk. Geomagnetic activity should remain Quiet (Kp 0-2) with isolated Unsettled (Kp 3) intervals during days 1 and early 2 (26th and 27th). Any time from midday day 2 until day 4 (27th-29th) there is an increasing chance of Active or Minor Storm (G1 intervals (Kp 4-5), as the Earth connects with the high speed streams of two concurrent coronal holes.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	30	30	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	20	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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